



Application No. 09/851,158
Attorney Docket No. 00862.022224

APPENDIX A

Please substitute the paragraph beginning at page 2, line 22, and ending on page 3, line 7, with the following.

-- When maintenance is performed in a semiconductor manufacturing apparatus of this type, there is an area that is predicted to be filled with an inert gas or an area in which the generation of toxic gas such as ozone that is harmful to the human body is predicted. The maintenance work is performed after opening a maintenance cover and waiting for the maintenance area to be supplied with a satisfactory amount of oxygen. It is necessary, therefore, to warn the maintenance individual of the hazards as by displaying a label indicating a hazardous condition, i.e., that there may not be a sufficient supply of oxygen, or by describing this situation in a maintenance manual. --

Please substitute the paragraph beginning at page 6, line 16, with the following.

-- A method of manufacturing semiconductor devices according to the present invention comprises steps of placing a group of manufacturing equipment for performing various processes, inclusive of the above-described semiconductor manufacturing apparatus, in a plant for manufacturing semiconductor devices, and manufacturing a semiconductor device by performing a plurality of processes using this group of manufacturing equipment. --

Please substitute the paragraph beginning at page 9, line 15, with the following.

-- Fig. 5 is a diagram showing the overall configuration of a semiconductor device production system; --

Please substitute the paragraph beginning at page 9, line 17, with the following.

-- Fig. 6 is a diagram showing the overall configuration of another form of a semiconductor device production system; --

Please substitute the paragraph beginning at page 10, line 11, with the following.

-- The semiconductor manufacturing apparatus shown in Figs. 1A and 1B includes a light source 1 for emitting light of a short wavelength, and an illuminating optics unit 2 for leading the light emitted from the light source 1 to a reticle 3 on which an exposure pattern has been formed. The reticle 3 is placed on a reticle stage 4. The latter moves the reticle 3, positions it precisely and fixes it. When exposure is carried out, the reticle stage 4 scans the reticle 3. The apparatus further includes an exposure projecting optics unit 5. A wafer 6 to undergo exposure is placed on a wafer stage 7. The latter moves the wafer 6 to an exposure position or scans the wafer 6 in sync with the reticle 3. --

Please substitute the paragraph beginning at page 10, line 24, and ending on page 11, line 15, with the following.

-- A chamber 8 is for performing a precise temperature adjustment of the overall apparatus. A console 9 for operating the semiconductor manufacturing apparatus is disposed outside the chamber 8. The console 9 has a display unit (monitor) which displays wafer information for processing a wafer by the semiconductor manufacturing apparatus, recipe information and the operation status of the apparatus, and an input unit for inputting data and information necessary for the apparatus proper. The input unit can be used to enter a command to change over to various modes, such as an ordinary processing mode and a maintenance mode, so that the semiconductor manufacturing apparatus can be set to each of these modes. When an ordinary processing operation or maintenance work is performed, various data is checked on the display unit of the console 9 and data and information necessary for the ordinary processing operation or maintenance work can be entered using the input unit. --

Please substitute the paragraph beginning at page 11, line 16, and ending on page 12, line 4, with the following.

-- Maintenance covers 11 (11a, 11b, ...) are disposed at a plurality of locations and are capable of being opened and closed so that access can be gained to various maintenance areas in order to maintain the various components within the chamber 8 as well as the interior of the illuminating optics unit 2, etc. The maintenance covers 11a to 11c are provided on the chamber 8, and the maintenance covers 11d, 11e are provided on the illuminating optics 2. As shown in

Fig. 1B, each maintenance cover 11 (11a to 11e) is provided with a switch 12 which, in response to the opening and closing of the maintenance cover 11, is turned on and off to output a signal indicative of the open/closed state of the maintenance cover 11, and with a lock plunger 13 for being locked in such a manner that the maintenance cover 11 cannot be opened. --

Please substitute the paragraph beginning at page 12, line 5, with the following.

-- Also provided in the vicinity of each maintenance cover 11 are an oxygen concentration sensor 14 for measuring the oxygen concentration inside the chamber 8 and inside the illuminating optics unit 2, and an ozone sensor 15 for sensing a toxic gas such as ozone inside the chamber 8 and inside the illuminating optics unit 2. A fan 16 for exhausting gas from inside the chamber 8 and the illumination optics unit 2 and for introducing the outside air is disposed in close proximity to the position at which the maintenance cover is attached. As mentioned above, it has been confirmed that the human body is adversely affected by an increase in ozone concentration owing to a reaction between oxygen and the exposing light caused by irradiation with high-energy exposing light at the absorption wavelength of oxygen. Accordingly, the ozone sensor 15 is provided to sense ozone in the maintenance area. --

Please substitute the paragraph beginning at page 14, line 19, with the following.

-- If ozone having a concentration in excess of a fixed value is sensed by the ozone sensor 15 in a case [where] when exposure processing is being performed by the usual exposure

sequence described above, the exposure sequence is terminated and so is the emission of light from the light source 1. --

Please substitute the paragraph beginning at page 14, line 25, with the following.

-- Reference will now be had to the block diagram of Fig. 2 and the flow chart of Fig. 3 to describe the procedure followed when performing maintenance on the apparatus. --

Please substitute the paragraph beginning at page 18, line 6, with the following.

-- In the case of an apparatus in which the chamber has been filled with an inert gas, the oxygen concentration sensor 14 will suffice and the ozone sensor 15 need not be used. Conversely, with an apparatus in which ozone is produced positively, the ozone sensor 15 will suffice and the oxygen concentration sensor 14 need not be used. However, from the standpoint of providing safety with a greater degree of certainty, it is [it] preferred that both the oxygen concentration sensor 14 and the ozone sensor 15 be provided in the manner described above. --

Please substitute the paragraph beginning at page 22, line 12, with the following.

-- Described next will be a system for producing semiconductor devices utilizing the above-described semiconductor manufacturing apparatus. This system for producing semiconductor devices (e.g., semiconductor chips such as IC and LSI chips, liquid crystal panels, CCDs, thin-film magnetic heads and micromachines, etc.) utilizes a computer network outside the semiconductor manufacturing plant to provide troubleshooting and regular maintenance of

manufacturing equipment installed at the semiconductor manufacturing plant and to furnish maintenance service such as the provision of software. --

Please substitute the paragraph beginning at page 22, line 23, and ending on page 23, line 17, with the following.

-- Fig. 5 is a schematic view illustrating the overall system. The system includes the business office 101 of the vendor (equipment supplier) that provides the equipment for manufacturing semiconductor devices. Semiconductor manufacturing equipment for performing various processes used in a semiconductor manufacturing plant is assumed to be the manufacturing equipment. Examples of the equipment are pre-treatment equipment (e.g., lithographic equipment such as exposure equipment, resist treatment equipment and etching equipment, heat treatment equipment, thin-film equipment and smoothing equipment, etc.) and post-treatment equipment (e.g., assembly equipment and inspection equipment, etc.). The business office 101 includes a host management system 108 for providing a manufacturing-equipment maintenance database, a plurality of control terminal computers 110, and a local-area network (LAN) 109 for connecting these components into an intranet. The host management system 108 has a gateway for connecting the LAN 109 to the Internet 105, which is a network external to the business office 101, and a security function for limiting access from the outside. --

Please substitute the paragraph beginning at page 26, line 14, and ending on page 27, line 5, with the following.

-- The business offices of vendors (equipment suppliers) such as an exposure equipment maker 210, a resist treatment equipment maker 220 and a thin-film treatment equipment maker 230 have host management systems 211, 221, 231, respectively, for remote maintenance of the equipment they have supplied. These have maintenance databases and gateways to the outside network, as described earlier. The host management system 205 for managing each piece of equipment in the manufacturing plant of the user is connected to the management systems 211, 221, 231 of the vendors of these pieces of equipment by the Internet or leased-line network serving as an external network 200. If any of the series of equipment in the manufacturing line malfunctions, the line ceases operating. However, this can be dealt with rapidly by receiving remote maintenance from the vendor of the faulty equipment via the Internet 200, thereby making it possible to minimize line downtime. --

Please substitute the paragraph beginning at page 27, line 6, with the following.

-- Each piece of manufacturing equipment installed in the semiconductor manufacturing plant has a display, a network interface and a computer for executing network-access software and equipment operating software stored in a storage device. The storage device can be an internal memory or a hard disk or a network file server. The software for network access includes a special-purpose or general-purpose Web browser and presents a user interface, which has a screen of the kind shown by way of example in Fig. 7, on the display. The operator

managing the manufacturing equipment at each plant enters information at the input items on the screen while observing the screen. The information includes model 401 of the manufacturing equipment, its serial number 402, subject matter 403 of the problem, its date of occurrence 404, degree of urgency 405, the particular condition 406, countermeasure method 407 and progress report 408. The entered information is transmitted to the maintenance database via the Internet. The appropriate maintenance information is sent back from the maintenance database and is presented on the display screen. --

Please substitute the paragraph beginning at page 28, line 1, with the following.

-- The user interface provided by the Web browser implements hyperlink functions 410 to 412 as illustrated and enables the operator to access more detailed information for each item, to extract the latest version of software, which is used for the manufacturing equipment, from a software library provided by the [vender] vendor, and to acquire an operating guide (help information) for reference by the plant operator. Here, the maintenance information provided by the maintenance database also includes the above-described information relating to the present invention, and the software library also provides the latest software for implementing the present invention. --

Please substitute the paragraph beginning at page 28, line 24, and ending on page 29, line 9, with the following.

-- The actual circuit is formed on the wafer by lithography, using the mask and wafer that have been prepared, at step 24 (wafer process), which is also referred to as "pre-treatment". A semiconductor chip is obtained, using the wafer fabricated at step 24, at step 25 (assembly), which is also referred to as "post-treatment". This step includes steps such as actual assembly (dicing and bonding) and packaging (chip encapsulation). The semiconductor device fabricated at step 25 is subjected to inspections such as an operation verification test and a durability test at step 26 (inspection). The semiconductor device is completed through these steps and then is shipped (step 27). --

Please substitute the paragraph beginning at page 30, line 14, with the following.

-- Thus, in accordance with the present invention as described above, a gas for raising oxygen concentration is blown in when maintenance is applied to an area in which oxygen concentration is set to a low value or to an area in which a toxic gas such as ozone, which is harmful to the human body, is produced. Furthermore, the oxygen concentration is sensed and maintenance is performed after the results of sensing indicate that a [save] safe level of oxygen concentration has been attained. This makes it possible to assure worker safety in the maintenance area and allows maintenance work to be performed safely at all times. In addition, maintenance can be performed in a shorter period of time and the efficiency of maintenance can be improved. --